

Notice of Allowability

Application No.

10/646,458

Applicant(s)

COLLINS ET AL.

Examiner

Maureen G. Arancibia

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the reply filed 22 June 2006.
2. ☒ The allowed claim(s) is/are 1-25,27,28 and 30-81.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>02/06/08/06</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimers filed on 27 March 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6,348,126; 6,494,986; 6,468,388; or 6,551,446; or U.S. Patent Application Serial No. 10/646,527 or 10/646,533 have been reviewed and are accepted. The terminal disclaimers have been recorded.

2. The terminal disclaimer filed on 28 August 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6,939,434 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Election/Restrictions

3. Claims 1-25, 27, 28, 30-35, 38-50, 63, and 75-81 are allowable. Claims 36, 37, 51-62, and 64-74, previously withdrawn from consideration as a result of a restriction requirement, include all the limitations of an allowable claim. Pursuant to the procedures set forth in MPEP § 821.04(a), **the restriction requirement between the inventions of Species I through XLIX, as set forth in the Office action mailed on 2 September 2005, is hereby withdrawn** and claims 36, 37, 51-62, and 64-74 are hereby rejoined and fully examined for patentability under 37 CFR 1.104. In view of the withdrawal of the restriction requirement, applicant(s) are advised that if any claim(s) including all the limitations of an allowable claim is presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double

patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

5. Authorization for this examiner's amendment was given in a telephone interview with Robert Wallace on 29 August 2006.

6. **The application has been amended as follows:**

Replace the text of Claim 35 as follows:

The reactor of Claim 1 wherein said **openings** are in said ceiling, whereby said hollow conduits terminate axially into said **openings**.

Replace the text of Claim 36 as follows:

The reactor of Claim 1 wherein said **openings** are in said side wall, whereby said hollow conduits terminate radially into said **openings**.

Replace the text of Claim 37 as follows:

The reactor of Claim 2 wherein said **openings** are in said base of said chamber, whereby said hollow conduits terminate axially into said **openings**.

In Claim 60, delete the following phrase from the last two lines of the claim:

, and insulating layer insulating said conductive insert from said
conductive base plate

In Claim 61, amend Line 5 to read:

lift pin assembly and said **conductive wafer support plate**, and a high

REASONS FOR ALLOWANCE

7. The following is an examiner's statement of reasons for allowance:

The prior art of record, alone or in combination, fails to teach or fairly suggest, in the context of the claims, a plasma immersion ion implantation reactor comprising an enclosure comprising a side wall and a ceiling and defining a chamber; said enclosure **having first and second pairs of openings, said first and second pairs being oriented transverse to one another, each pair of openings being separated from one another by a distance approximately equal to the diameter of the workpiece support, whereby the two openings of each pair are adjacent respective points along said side wall that are 180 degrees apart along the circumference of said side wall; first and second mutually transverse hollow conduits outside of said chamber, each conduit having first and second ends connected to respective openings of the corresponding pair of openings, so as to provide first and second mutually transverse reentrant paths extending through said conduit and across a process region within the enclosure and intersecting one another in the process region; and first and second RF plasma source power applicators adjacent said first and second conduits, respectively.**

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

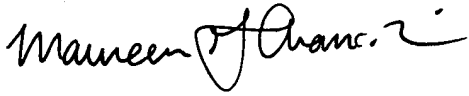
Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, appearing to read "Maureen G. Arancibia". The signature is fluid and cursive, with a large, stylized initial "M" and a trailing flourish.

Maureen G. Arancibia
Patent Examiner
Art Unit 1763

A handwritten signature in black ink, appearing to read "Parviz Hassanzadeh". The signature is more compact and angular than the one on the left, with a prominent initial "P".

Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763